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PATENT  
2611-0175P

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: KAJIYA, Satoshi et al.  
Int'l. Appl. No.: PCT/JP01/05416  
Appl. No.: New Group:  
Filed: February 27, 2002 Examiner:  
For: OPTICAL AMPLIFIER DEVICE

PRELIMINARY AMENDMENT

**BOX PATENT APPLICATION**

Assistant Commissioner for Patents  
Washington, DC 20231

February 27, 2002

Sir:

The following Preliminary Amendments and Remarks are respectfully submitted in connection with the above-identified application.

AMENDMENTS

IN THE SPECIFICATION:

Please amend the specification as follows:

Before line 1, insert --This application is the national phase under 35 U.S.C. § 371 of PCT International Application No. PCT/JP01/05416 which has an International filing date of June 25, 2001, which designated the United States of America.--

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IN THE DRAWINGS:

Please substitute the attached Figs. 15 and 16 for the figures 15 and 16 in the instant application.

IN THE CLAIMS:

Please amend the claims as follows:

46. (Amended) An optical amplifier apparatus comprising:
  - a first optical amplifier which amplifies an input wavelength-multiplexed signal light;
  - a compensation light source which injects a compensation light that propagates in a forward direction of a propagation direction of the input signal light to said first optical amplifier;
  - an optical variable attenuator which attenuates an output signal light of said first optical amplifier;
  - a second optical amplifier which amplifies an output signal light of said optical variable attenuator;
  - a wavelength selecting unit which interrupts a compensation light at an output side of said second optical amplifier, and transmits only a signal light;
  - an output detecting unit which detects an output level of a signal light at an output side of said wavelength selecting unit;
  - an output control unit which controls the attenuation of an

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output signal light attenuated by said optical variable attenuator according to an output level detected by said output detecting unit;

a gain inclination detecting unit which detects a gain inclination of said second optical amplifier; and

a gain inclination control unit which controls a gain inclination by adjusting an output light of said compensation light source according to a gain inclination detected by said gain inclination detecting unit.

51. (Amended) An optical amplifier apparatus comprising:

a first optical amplifier which amplifies an input wavelength-multiplexed signal light;

a compensation light source which injects a compensation light that propagates in a forward direction of a propagation direction of the input signal light to said first optical amplifier;

an optical variable attenuator which attenuates an output signal light of said first optical amplifier;

a second optical amplifier which amplifies an output signal light of said optical variable attenuator;

a wavelength selecting unit which interrupts a compensation light at an output side of said second optical amplifier, and transmits only a signal light;

an output detecting unit which detects an output level of a signal light at an output side of said wavelength selecting unit;

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an output control unit which controls an output light of said compensation light source according to an output level detected by said output detecting unit;

a gain inclination detecting unit which detects a gain inclination of said second optical amplifier; and

a gain inclination control unit which controls a gain inclination by adjusting the attenuation of an output signal light attenuated by said optical variable attenuator according to a gain inclination detected by said gain inclination detecting unit.

56. (Amended) An optical amplifier apparatus comprising:

a first optical amplifier which amplifies an input wavelength-multiplexed signal light.

a compensation light source which injects a compensation light that propagates in a forward direction of a propagation direction of the input signal light to said first optical amplifier;

a second optical amplifier which amplifies an output signal light of said first optical amplifier.

a wavelength selecting unit which interrupts a compensation light at an output side of said second optical amplifier, and transmits only a signal light.

an output detecting unit which detects an output level of a signal light at an output side of said wavelength selecting unit.

an output control unit which controls output lights of

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excitation light sources of said first optical amplifier and said second optical amplifier according to an output level detected by said output detecting unit;

a gain inclination detecting unit which detects a gain inclination of said optical amplifier; and

a gain inclination control unit which controls a gain inclination by adjusting an output light of said compensation light source according to a gain inclination detected by said gain inclination detecting unit.

61. (Amended) An optical amplifier apparatus comprising:

a first optical amplifier which amplifies an input wavelength-multiplexed signal light;

a compensation light source which injects a compensation light that propagates in a forward direction of a propagation direction of the input signal light to said first optical amplifier;

a second optical amplifier which amplifies an output signal light of said first optical amplifier;

a wavelength selecting unit which interrupts a compensation light at an output side of said second optical amplifier, and transmits only a signal light;

an output detecting unit which detects an output level of a signal light at an output side of said wavelength selecting unit;

an output control unit which controls an output light of said compensation light source according to an output level

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detected by said output detecting unit;

a gain inclination detecting unit which detects a gain inclination of said second optical amplifier; and

a gain inclination control unit which controls a gain inclination by adjusting output lights of an excitation light source of said first optical amplifier and an excitation light source of said second optical amplifier according to a gain inclination detected by said gain inclination detecting unit.

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REMARKS

The specification has been amended to provide a cross-reference to the previously filed International Application.

The claims have been revised to better reflect Applicants' invention.

It has come to Applicants' attention that Figs. 15 and 16 were inadvertently mixed. Replacement Figs. 15 and 16 are attached hereto to correct this minor error.

Entry of the above amendments is earnestly solicited. An early and favorable first action on the merits is also earnestly solicited.

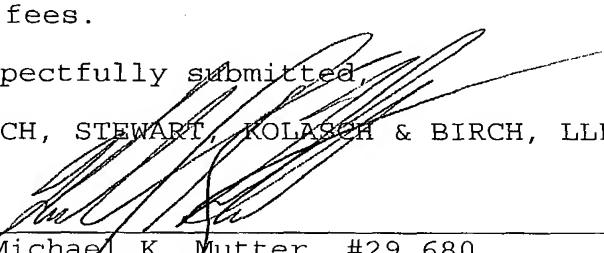
Attached hereto is a marked-up version of the changes made to the application by this Amendment.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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By

  
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Attachment: VERSION WITH MARKINGS TO SHOW CHANGES MADE

(Rev. 02/21/02)

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

New Figs. 15 and 16 have been added.

The claims have been amended as follows:

46. (Amended) An optical amplifier apparatus comprising:

~~[an]~~ a first optical amplifier which amplifies an input wavelength-multiplexed signal light;

a compensation light source which injects a compensation light that propagates in a forward direction of a propagation direction of the input signal light to said first optical amplifier;

~~[a first optical amplifier which amplifies the signal light;]~~

an optical variable attenuator which attenuates an output signal light of said first optical amplifier;

a second optical amplifier which amplifies an output signal light of said optical variable attenuator;

a wavelength selecting unit which interrupts a compensation light at an output side of said second optical amplifier, and transmits only a signal light;

an output detecting unit which detects an output level of a signal light at an output side of said wavelength selecting unit;

an output control unit which controls the attenuation of an

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output signal light attenuated by said optical variable attenuator according to an output level detected by said output detecting unit;

a gain inclination detecting unit which detects a gain inclination of said second optical amplifier; and

a gain inclination control unit which controls a gain inclination by adjusting an output light of said compensation light source according to a gain inclination detected by said gain inclination detecting unit.

51. (Amended) An optical amplifier apparatus comprising:

[an] a first optical amplifier which amplifies an input wavelength-multiplexed signal light;

a compensation light source which injects a compensation light that propagates in a forward direction of a propagation direction of the input signal light to said first optical amplifier;

[a first optical amplifier which amplifies the signal light;]

an optical variable attenuator which attenuates an output signal light of said first optical amplifier;

a second optical amplifier which amplifies an output signal light of said optical variable attenuator;

a wavelength selecting unit which interrupts a compensation light at an output side of said second optical amplifier, and transmits only a signal light;

an output detecting unit which detects an output level of a signal light at an output side of said wavelength selecting unit;

an output control unit which controls an output light of said compensation light source according to an output level detected by said output detecting unit;

a gain inclination detecting unit which detects a gain inclination of said second optical amplifier; and

a gain inclination control unit which controls a gain inclination by adjusting the attenuation of an output signal light attenuated by said optical variable attenuator according to a gain inclination detected by said gain inclination detecting unit.

56. (Amended) An optical amplifier apparatus comprising:

a first optical amplifier which amplifies an input wavelength-multiplexed signal light;

a compensation light source which injects a compensation light that propagates in a forward direction of a propagation direction of the input signal light to said first optical amplifier;

[a first optical amplifier which amplifies the signal light;]

a second optical amplifier which amplifies an output signal light of said first optical amplifier;

a wavelength selecting unit which interrupts a compensation light at an output side of said second optical amplifier, and

transmits only a signal light;

an output detecting unit which detects an output level of a signal light at an output side of said wavelength selecting unit;

an output control unit which controls output lights of excitation light sources of said first optical amplifier and said second optical amplifier according to an output level detected by said output detecting unit;

a gain inclination detecting unit which detects a gain inclination of said optical amplifier; and

a. gain inclination control unit which controls a gain inclination by adjusting an output light of said compensation light source according to a gain inclination detected by said gain inclination detecting unit.

61. (Amended) An optical amplifier apparatus comprising:

a first optical amplifier which amplifies an input wavelength-multiplexed signal light;

a compensation light source which injects a compensation light that propagates in a forward direction of a propagation direction of the input signal light to said first optical amplifier;

[a first optical amplifier which amplifies the signal light:]

a second optical amplifier which amplifies an output signal light of said first optical amplifier;

a wavelength selecting unit which interrupts a compensation

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light at an output side of said second optical amplifier, and transmits only a signal light;

an output detecting unit which detects an output level of a signal light at an output side of said wavelength selecting unit;

an output control unit which controls an output light of said compensation light source according to an output level detected by said output detecting unit;

a gain inclination detecting unit which detects a gain inclination of said second optical amplifier; and

a gain inclination control unit which controls a gain inclination by adjusting output lights of an excitation light source of said first optical amplifier and an excitation light source of said second optical amplifier according to a gain inclination detected by said gain inclination detecting unit.

(Rev. 11/13/01)